

Canberra Botanic Gardens

GROWING NATIVE PLANTS

Vol. 6, 1976



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Grevillea acanthifolia

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NATIVE CONIFERS

The requirements of many gardeners to add a plant of contrasting form to their gardens could easily be fulfilled by the use of an Australian conifer. The variety of shapes and foliage found with the native species is quite significant, and their current limited use as garden subjects remains a mystery.

Conifers are not flowering plants, but are characterised by the fact that they produce both male and female cones. These cones are normally obvious on a plant and though some species produce very small cones others such as *Araucaria bidwillii* have female cones as large as a football. Conifers belong to an extremely ancient group of plants and fossil evidence dates them as some of the earliest land plants.

Australia has forty recognised species of conifers and they can be found inhabiting many of the varied ecosystems of the continent. Some occur in alpine regions where they are covered at times by snow. Others are found in rainforests, semi-arid regions and temperate regions.

The largest genus of conifers in Australia is *Callitris*. It contains twelve species, one of which has three subspecies. There is also one hybrid *Callitris* known to occur — *C. columellaris* x *C. endlicheri*.

Callitris species are almost always columnar in shape and have the widest distribution of any of the Australian genera.

Callitris columellaris, the White Cypress Pine, is the most widespread of all Australian conifers. It can be found in monsoonal areas around Darwin, along the entire eastern coast, throughout most of NSW and much of central Australia. It is variable in its form and can be a shapely conical plant to 4 m x 3 m or an upright tree to 15 m. The taller plants occur in stands in inland areas of NSW and Queensland and are used to produce the commercial timber Cypress Pine.

It is a species that is very hardy and adaptable in cultivation. It prefers well-drained sites and is most useful for planting in rocky areas. The

blue-grey or grey-green foliage provides excellent contrast for other plants and it has definite appeal as a garden plant where sufficient space is available.

Callitris endlicheri, commonly known as the Black Cypress Pine, is an upright columnar species found in most tableland areas of NSW as well as south-east Queensland and north-east Victoria. It is common in the ACT and is very much at home in well-drained gardens here. The foliage is a much darker green than *C. columellaris* and is frequently seen with foliage right to ground level, even in older plants. Some extremely fine specimens can be seen in Canberra Botanic Gardens. This species is another excellent plant for rocky hill-sides.

Callitris macleayana occurs in a few confined areas on the NSW north coast. It is a most elegant plant in Canberra gardens and the superb coppery hues of its foliage during winter is equal to that of any exotic conifer. This species is slower growing than the previous two species and is an excellent specimen or tub plant.

It has been in cultivation at the Gardens for eight years and is proving most reliable. Plants have been grown well in a wide variety of situations and all are performing extremely well. The largest plants are about 4 m tall and 1.5 m wide.

Callitris oblonga is an endemic Tasmanian species. Its performance as a garden plant is most encouraging and though the initial growth is comparatively slow, it can be expected to attain a mature size of around 5 m x 1 m. It seems to accept poorer drained sites more readily than other species of *Callitris*.

Callitris rhomboidea, known commonly as the Port Jackson Pine, is probably the most widely planted Australian conifer. It is a very useful and adaptable plant which occurs naturally in mainly coastal regions of NSW, Queensland, Victoria, Kangaroo Island (SA) and rarely on mainland South Australia. It also occurs naturally in Tasmania where it was formerly known as *C. tasmanica*.

It is a graceful narrow plant of dark green foliage and is characterised by the slightly weeping habit of its newer growth. This habit is not entirely restricted to this species of *Callitris* but it is still a recognisable feature.

Callitris species are generally hardy and adaptable in cultivation. They are prone to attack by the Cypress Pine saw fly larvae and a plant can be severely defoliated by them in a short period. A contact or systemic insecticide should be used when the pests are first noticed, with a follow-up treatment if necessary. All species respond well to applications of fertilizer either foliage fed or as soil



dressings. Good success has been noted at Canberra Botanic Gardens using 50 g of 10:9:8 fertilizer per square metre. There is no need to prune the plants unless they are required to be reshaped.

Propagation by seed is standard practice, but the existing rare plants with golden coloured foliage have been successfully grafted on to seedling *Callitris* stocks.

Another genus, *Podocarpus*, which has eight Australian species, offers several useful garden plants for Canberra conditions.

Podocarpus lawrencei, the Mountain Plum Pine, is distributed in the alpine regions of Tasmania, Victoria and NSW reaching its northern limit in the Brindabella Range near Canberra.

In areas frequently subjected to a heavy snow cover this species is quite prostrate, following the contours of rocks and other natural formations.

Cultivated plants do not always retain this habit, but are often of a shrubby or decumbent nature with some prostrate branches. Some specimens may, however, reach 3 m in favourable conditions.

P. lawrencei bears female cones which are surrounded by a distinctive red fleshy layer which adds to the ornamental value of the plant.

This species favours a richer loamy soil but performs quite well in a variety of Canberra's natural soils. It is very tolerant of almost any location in the home garden but prefers sunlight and reasonably moist, well-drained sites.

Podocarpus elatus, the Plum Pine, is a fine ornamental shrub in Canberra Botanic Gardens and has attained a size of 2 m x 2.5 m after six years. It is in a very open situation and has not suffered any visible damage from frosts.



Top: *Athrotaxis selaginoides*:

Athrotaxis — from the Greek, *athros*, crowded together, *taxis*, arrangement, referring to the position of the cone scales; *selaginoides* — because of the resemblance of the foliage to *Selago* (a Latin name used by Pliny), a plant which the Druids gathered with mysterious ceremonies

Bottom: *Callitris drummondii* (left):

Callitris — from the Greek, *kallos*, beautiful, and *treis*, three, alluding to the symmetrical arrangement of the leaves; *drummondii* — after James Drummond (1783-1863), a botanist in Western Australia from 1829

Callitris endlicheri (centre): *endlicheri* — after S.L. Endlicher (1805-1849), a Viennese botanist

The natural distribution of the species is along the east coast from Nowra to Cairns in rainforests. It is very adaptable to soil types but prefers richer soils, good drainage and adequate summer watering.

The foliage is not typical of conifers. The leaves are flattened and bear a prominent mid-vein and can be up to 15 cm long and 1.5 cm wide. The stem of the plant is clothed with a fibrous bark and the cone is fleshy. It has good ornamental value but does not appear to fruit in Canberra.

Actinostrobus pyramidalis is a very ornamental plant that occurs naturally in Western Australia. It is not unlike *Callitris* in general appearance.

It has not performed with great reliability in early plantings at Canberra Botanic Gardens. More recent plantings and better site selection have proven that the plant can be grown without difficulty in well-drained soils. A mature plant can be expected to grow to 2 m x 1 m and it produces small but decorative cones.

The potential of a number of Australian species of conifers as rockery plants has been recognised overseas. The endemic Tasmanian species of *Diselma archeri*, *Microcachrys tetragona* and *Microstrobos niphophilus* are much sought-after for this purpose. All three are low-growing plants and bear the typical scale-like leaves of most conifers.

They do favour loamy soils though a batch of plants of all three species has been grown successfully in soils at Canberra Botanic Gardens which are not considered very much like loam. The fact that they are small and relatively slow growing suggests that their best position would be in a well-kept rockery.

Microstrobos fitzgeraldii is the rarest of the Australian conifers and in natural conditions is known only in one restricted area in the Blue Mountains. It grows on rock ledges in the spray from a waterfall and adapts extremely well to cultivation.

Here at Canberra Botanic Gardens it grows into a small shrub to about 0.4 m high by 1 m across. The arching branches and pale grey-green foliage make it another outstanding plant for a rockery. It does not need to be grown in wet or humid positions, and is tolerant of a variety of soils.

Dacrydium franklinii, another excellent species from Tasmania, has not been in cultivation in the Botanic Gardens for long enough to recommend its general use in gardens. It is fair, however, to say that it is performing satisfactorily, and it is expected that it will become too large for the average rockery.

The plant when young is of drooping habit with an open framework of branches. Its light





Top left and right: *Callitris preissii*:
preissii — after S. Preiss, a German plant
collector (1839)

Bottom: *Callitris macleayana*:
macleayana — after William Macleay
(1792-1865), a naturalist

green foliage colour gives good contrast for other greens.

Dacrydium franklinii produces excellent timber and has been used for boat building. Natural stands of this species are becoming rare.

It prefers moist situations and rich loamy soils.

Experience in the Botanic Gardens has shown that all of the Australian conifers do make ideal pot plants. The ultimate size of the individual species will determine its long-term use as a container plant.

Providing a moderately rich but free-draining potting medium is used, and adequate plant nutrition is made available, these conifers do not object to the restricted root run they experience when grown in containers.

Some of the more outstanding species recommended for their ornamental value in pots or tubs are:

Phyllocladus asplenifolius is an extremely interesting foliage plant. It is not a typical conifer foliage, the adult 'leaves' or cladodes being more or less rhomboid in shape growing

to 4 cm in length and 3 cm in width. The plant, upright and regularly shaped is most attractive. It occurs in a wide range of habitats in Tasmania.

Athrotaxis selaginoides, the King Billy Pine, is another Tasmanian endemic and again an unusual type of foliage gives this species a grace all of its own. The leaves are up to 15 mm long, incurving and fairly densely crowded on the many branchlets.

Normally a tall tree in its native habitat, this species makes an ideal tub plant and can be highly praised for its hardiness in cultivation. One could look a long way for a tree more eminently suited for decoration as a Christmas tree in a container.

Araucaria bidwillii, the Bunya Pine, is probably the most widely known of Australia's conifers although its natural distribution is limited to the Bunya National Park in Queensland and one small stand near Mossman in north Queensland.

It was widely planted in gardens in early times and some magnificent specimens can be seen dotted throughout Australia. It can be grown outdoors in Canberra and some young plants are performing well in the rainforest of Canberra Botanic Gardens.

As a tub plant it has exceptional merit, and is also very suitable for growing indoors. Its ultimate size and reasonably quick growth rate prevent its use indoors for a long period. It is, however, a most enhancing plant and its distinctive foliage makes this species a most desirable one.

Agathis robusta, the Kauri Pine, is a species that occurs in south-east Queensland. Its leaves are flat, up to 15 cm long and 3 cm wide. The use of this species as a pot plant has long been recognised. Its symmetrical shape has great appeal.

In nature *A. robusta* is a tall tree with attractive brown bark, and after several years in a container it would probably be best if planted out. It does survive Canberra's cold but should be given some protection from frost.

With the exception of the *Callitris* species Australian conifers seem little affected by pests, and in fact experience in Canberra Botanic Gardens has shown that not all of the *Callitris* are susceptible.

All species benefit from regular summer watering and under normal conditions, conifers thrive. The application of fertilizers has proven advantageous and pruning where necessary to remove a damaged branch or to shape the plant is quite in order. There are very few species that require pruning, as their natural shapes are very tidy.

The propagation of conifers can be carried out by either seed or cuttings. Many species

can be grown by both methods but certain species show distinct preference for one or the other method.

Obtaining seed is a problem and some seed is of low viability. The *Callitris* species are easily grown by seed and not so easily from cuttings. *Athrotaxis* species can be grown by cuttings but are slow to form roots.

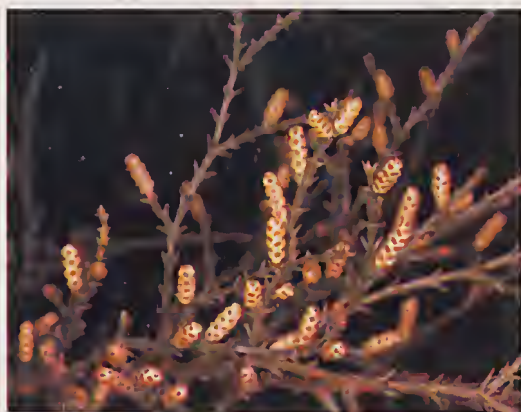
Obtaining plants of the conifers mentioned here could be fairly difficult and the specialist native plant nurseries would be the best source.

There are several specialist conifer nurseries scattered throughout the capital cities, and garden or nursery trade periodicals provide some of their addresses. The more requests made for these plants the sooner they will become readily available.



Top: *Podocarpus lawrencei*: *lawrencei* — after R.W. Lawrence (1807-1833) an early Tasmanian botanist

Middle: *Actinostrobus pyramidalis*: *Actinostrobus* — from the Greek, aktinotus, rayed and strobilus, cone, alluding to the arrangement of the cone scales; *pyramidalis* — pyramid-shaped.



Bottom: *Podocarpus spinulosus*: *Podocarpus* — from two Greek words, podos, a foot, karpos, a fruit, referring to the swollen structure under the fruit; *spinulosus* — referring to the sharp point on the leaf



HELMHOLTZIA GLABERRIMA

Helmholtzia glaberrima is a tall perennial herb, with large iris-like leaves which may grow up to 2 m high and 4-6 cm wide. The rhizomes branch freely at the base growing into a large clump in a similar manner to *Anigozanthos flavidus* (Kangaroo Paw). The flowering stem is 60-100 cm long with hundreds of small pink-white flowers. Flowering usually begins in December and may continue until July.¹ When in flower, *Helmholtzia glaberrima* affords a magnificent sight, especially where the flowering stems arch out between ferns over small pools in the rainforest gully at Canberra Botanic Gardens.

The planting situation has a marked effect on the growth of *Helmholtzia*. Plants in the rainforest gully growing in heavy shade and kept constantly moist by the mist sprays are robust and healthy, 2 m tall with rich green leaves; other plants in more open drier positions are 75 cm high with yellow-green leaves. The ability to survive severe frost may be somewhat in doubt, although given the moderate protection of tree cover, a slight blackening of the leaves is usually all that occurs. From this it seems that *Helmholtzia* could be cultivated by the home gardener in Canberra providing its requirements were kept in mind. It should be ideal for growing against the southern wall of a house provided the situation is kept moist.

Helmholtzia glaberrima has been grown as a hothouse or glasshouse plant in England for many years and seems to adapt readily to this kind of culture. It should be grown in a large pot 30 cm or more wide with a well-drained soil mix and kept constantly moist.

Propagation may be either by seeds or divisions, depending on numbers required. The fine brown seeds sown on a light sandy soil mix and covered by approximately 3 mm of sand will germinate in thirty-forty days. These seedlings are treated in the normal nursery manner and should be ready for planting in two years. Division of larger plants is also possible and if this is carried out in spring the divided



Helmholtzia glaberrima: *Helmholtzia* — after Professor Herman Helmholtz, an ophthalmologist; *glaberrima* — from the Latin, meaning very smooth, referring to the smoothness of the foliage

portions will grow into healthy plants in a single season.

Apart from removal of spent flower heads and attention to watering, *Helmholtzia* requires very little maintenance. The flowers are excellent for decorative purposes, often lasting three weeks after being cut. The strong erect stems and bold foliage can both be used to advantage in floral displays.

Helmholtzia belongs to the family *Philydraceae* of which there are only two other genera, *Philydrella* and *Philydrum*; all of these have the similar habit of growing in wet areas. There are three species of *Helmholtzia* — one in New Guinea, another from the Atherton Tablelands of Queensland, and *H. glaberrima* from the MacPherson Range on the Queensland-NSW border where it occurs in wet mountain gullies near streams and waterfalls at heights of about 600-1000 m.

¹ RHS Colour Chart, 1966, flowers, red-purple group 62D; stems, red group 48A.

BRACHYSEMA LANCEOLATUM

Brachysema lanceolatum: *Brachysema* — from the Greek, *brakhys*, short, *sema*, standard, referring to the very short standard of the flower; *lanceolatum* — lance-like, referring to the shape of the leaves



Brachysema lanceolatum is native to the south-west of Western Australia where it tends to hide its flowers among the understorey of other native species.

It was not until it was introduced into the horticultural sphere that its full potential was realised, and it is now considered to be a suitable plant for inclusion in a wide range of areas, both as an individual specimen and as mixed mass planting for quick and dense coverage.

Although it is an understorey shrub in its natural habitat, many specimens have been growing in Canberra Botanic Gardens for more than ten years with little or no frost damage and with minimal overhead protection.

When successfully established in the garden its pleasing features are quickly noticed. Bright red, pea-shaped flowers appear in the spring, solitary or clustered on short pedicels along the branches.¹ Sometimes as many as seven flowers are present in the one leaf axil and these are borne at each axil along the upper branches.

When not in flower the beauty of the plant does not diminish significantly as the bright green leaves with their silvery underside then become a focal point. The growth habit of the plant is such that several leaves are produced showing their top surface and these are interspersed with the odd leaf arranged in a manner to produce a shining effect as the under-surface becomes visible.

After flowering has finished, the new growth, which also has a silvery grey colouring, tips the branches in a distinctive manner which complements the leaf under-surface where visible.

When planted as a single specimen *B. lanceolatum* normally develops into a medium shrub 1.5 m in height at the centre with the ascending branches producing a wide dome effect. This dome-shaped habit continues as the newer growth tends to hang down and spread, producing a wider base which may ultimately reach 3-4 m across.

When grown in clumps it tends to become intertwined with the other plants and by using them for support loses some of the dome shape.

The usual means of propagation is by seed, scarified or treated with boiling water and sown in late winter or spring. Some success has also been obtained with cuttings preferably taken in January, using normal propagation methods as discussed in *Growing Native Plants*, Vol.2, p.26.

No pests have been noted, although care should be taken to ensure good drainage and thus avoid the risk of root rot attack.

¹ RHS Colour Chart, 1966, flowers, red group 45C.

GREVILLEA x GAUDICHAUDII

Grevillea x gaudichaudii: *Grevillea* — after C.F. Greville, an English patron of botany; *gaudichaudii* — after a French botanist, C. Gaudichaud-Beaupre

Grevillea x gaudichaudii is known to be a natural hybrid between *G. acanthifolia* and *G. laurifolia*, but is sometimes incorrectly regarded as a species.

A native of the Blue Mountains region of eastern Australia, this hybrid is found growing in close proximity to its parents with some forms closely approaching one parent or the other. The form under general cultivation and extensively used in Canberra Botanic Gardens is strictly a ground cover plant. It has the spreading habit of *G. laurifolia* but has the advantage of being more vigorous and faster growing.

Ground cover plants such as *G. x gaudichaudii* are a great asset to any garden. These plants are capable of suppressing weed growth and conserving soil moisture as well as providing a most effective natural appearance. Some mulches have these qualities but they have not the attractiveness, especially when in flower, of ground cover plants. More information on these plants can be found in *Growing Native Plants*, Vol.1, pp.14-15 and Vol.4, pp.74-82.





Grevillea x gaudichaudii

Leaves of *G. x gaudichaudii* resemble those of the parent *G. acanthifolia*, being deeply pinnatifid, five-nine lobed. These lobes are oblong to ovate in shape, pungent-pointed, but rarely themselves lobed. Under-surfaces of the 5-10 cm long leaves are slightly paler and often sprinkled with hairs.

Reddish-purple flowers cover the long prostrate branches during the early summer months.¹ The flowers are arranged in one-sided racemes 5-8 cm long. *G. x gaudichaudii* belongs to the Toothbrush group of Grevilleas and the word Toothbrush refers to the arrangement of these individual flowers.

Only very occasionally does this species produce any fruits. However, as this plant is a hybrid, vegetative propagation is essential to obtain progeny true to type.

Most Grevilleas are easily propagated by cuttings, *G. x gaudichaudii* included. Semi-soft tip cuttings 15 cm long taken during the summer months are not difficult to strike.

G. x gaudichaudii is an attractive prostrate plant, capable of covering an area of 9 m² in three years. Application of fertilizer is beneficial as it keeps the plant in a healthy condition, thus being more resistant to disease and insect attack. A recommended program of fertilizing this hybrid and most other natives is to apply blood and bone in February and a 10:9:8 fertilizer in September. When fertilizing, be particularly careful not to damage the elongated branches, either by breakage or fertilizer burn.

This hybrid is suited to most well-drained soils and requires very little pruning apart from the cutting back of long, unwanted branches.

Some mite damage has been noticed but they can be easily controlled with Kelthane, Rogor or Sulphur.

An interesting development in Canberra Botanic Gardens has been the creation of a *Grevillea* standard. *G. x gaudichaudii* and other prostrate species have been successfully grafted on to *G. robusta* which at 1.5 m high makes ideal stock. Plants were forced grown thereby producing a slender soft specimen excellent for grafting. November to January is the best time of the year to carry out grafting with the approach bottle graft being the most successful. The grafted *G. x gaudichaudii* scions grow a little quicker than plants produced from cuttings and an attractive weeping standard is easily produced within two years of grafting. Once this strong growing scion has taken, some pruning should be carried out. This produces a bushy top and not one or two long leaders.

¹ RHS Colour Chart, 1966, perianth, grey group 201D; style, red group 53C; stigma, yellow-green group 152B.

PARAHEBE PERFOLIATA

This plant, belonging to the family Scrophulariaceae, is widely distributed in the higher areas of the Victorian and NSW mountains from a truly alpine habitat down to the wetter montane forest regions. It is an attractive grey-green foliaged plant growing from 50 cm to 1 m in height and preferring moist pockets where it grows best. The plant usually dies back in winter but in sheltered positions it may retain its growth into the new season. In this case it has a tendency to become rather straggly.

Even when not in flower the leaves of this plant make an attractive show. They are opposite and stem clasping, often becoming joined along their margins and forming what is termed perfoliate leaves (which pertains to its specific name). The leaves are generally entire though sometimes toothed on the lower third nearest the stem. They can be shaped like an arrow head to almost round, abruptly narrowing to a point at the apex. The leaves are glaucous, except where old when they lose their bloom. When very young the leaves are tinged purple.

The dainty deep blue sometimes blotched purple flowers are borne on very long slender

terminal or axillary racemes.¹ The individual flowers are small with four sepals and four petals. The joined petals are 5-15 mm long with white hairy basal lobes. The fruit is a capsule which is somewhat egg-shaped and tapering to a point and slightly more than twice as long as the calyx.

These specimens in Canberra Botanic Gardens have proven to be suitable to many soil types. They are especially suited to rock pockets and have withstood severe frosts and prolonged dry periods without any harm.

To prevent the plant from becoming too straggly and untidy it is best to cut the old growth off at ground level during August. About mid-September the attractive new purple tinged leaves appear. The stems grow rapidly until about mid-November when the small flowers open. Some early plants may come into flower as early as the end of October. They continue to flower until the first or second week in January. The seed begins to mature about two weeks later.

Parahebe perfoliata can best be propagated by cuttings. These can be taken at almost any time using either tip or older wood cuttings. They will strike readily. As the plant produces masses of seed it could be propagated by this alternative means.

The plant is subject to attack by green aphid in late spring and summer but these may be readily controlled with Rogor 40 or similar insecticide.

¹ RHS Colour Chart, 1966, corolla, violet blue 91A.

Parahebe perfoliata: *Parahebe* — resembling *Hebe*, a closely related plant; *perfoliata* — refers to the stem-clasping leaves



CALLISTEMON SIEBERI

The specimens growing in Canberra Botanic Gardens have proven to be good garden subjects, particularly in wetter areas. The plants originating from seed collected from the higher altitudes of its range have only attained a height of 1 m in eight years, whilst those grown from seed collected at lower altitudes have reached a height of slightly more than 3 m in the same time. A spread of nearly 2 m can be expected from the large forms. Once the above dimensions have been reached the growth rate drops off sharply.

One of the attractive features exhibited by *C. sieberi* are the colourful bracts which surround the developing buds. These buds first become evident towards the end of July and as early spring approaches the protective bracts become an attractive and very distinctive pink-bronze colour. By the first week in November, the showy bracts have become a less conspicuous green and the buds burst to release their captive stamens.¹

The Alpine Bottlebrush (*Callistemon sieberi*), as this common name suggests, grows naturally at altitudes from above 2000 m down to around 900 m. It is found commonly in and around sphagnum bogs and swamps and along watercourses in Queensland, NSW and Victoria. In NSW it occurs in the Snowy Mountains region and the higher Blue Mountains, and in Victoria in the north-east alps. In Queensland, it occurs near Racecourse Creek north-east of Wallangarra.

Dense thickets are formed by this plant which are usually between 1 m and 2.5 m in height. In areas where this plant has established itself, it often does so to the total exclusion of all other plants.

In its mountain habitat *Callistemon sieberi* comes into flower late in the season, but when it does bloom masses of small, dense, cream brushes are borne on the ends of the branches. Pink forms may be seen on rare occasions.

The leaves are narrow and sharply pointed, being 1.5-2.5 cm in length and less than 3 mm wide. The under-surface usually has scattered

oil glands. Silky hairs cover the underside of the older leaves nearest the stem while the younger leaves are entirely covered on both sides with dense silky hairs.

The flowers are produced on dense terminal spikes out of which grows a leafy shoot as flowering comes to an end. The bracts, which are larger than the flowers, soon become deciduous excepting those at the top which become leaflike and remain on the plant longer. The sepals are often reddish while the petals which are more or less inconspicuous are cream to pale yellow in colour and about 3 mm long. The stamens, in two rows, which are the showy part of the flower, are numerous and about three times as long as the petals. They are rich yellow in colour. Seed, which is very small, is produced in small almost globular woody capsules about 5-6 mm in diameter. Seed is shed through a very small opening when ripe.

Callistemon sieberi can be readily propagated from seed extracted from the oldest capsules collected when at least one year old. The capsules should be placed in a paper bag or a saucer-like dish to dry. As moisture is lost and the capsules become dry they will open, releasing the very small seed. Tip cuttings using the new season's growth can also be used.

This plant has proven itself in Canberra Botanic Gardens to be particularly suited to wetter areas although it will also grow successfully on drier sites. It is relatively free from pests and diseases but like most *Callistemon* spp. may suffer attack by scale insects, thrips and occasionally sawfly larvae. If attacked by scale or thrips, control can be effected by the application of a mixture of white oil and dimethoate, and if attacked by sawfly larvae these can be controlled with Carbaryl.

¹ RHS Colour Chart, 1966, stamens, near yellow group 8B.

Callistemon sieberi: *Callistemon* — from two Greek words, *kallistos*, most beautiful, and *stemon*, a stamen; *sieberi* — named after F.W. Sieber, an early 18th century botanist from Prague.



ALPHITONIA EXCELSA

Alphitonia excelsa, the Red Ash, sometimes called Leatherjacket or, when found growing on the coast, Coopers Wood, is a member of the family Rhamnaceae, which contains sixteen Australian genera and is well represented beyond Australia.

Apart from its value as an ornamental tree, *Alphitonia excelsa* serves as a fodder plant for

Alphitonia excelsa: *Alphitonia* — from the Greek, *alphiton*, pearl barley (allusion obscure); *excelsa* — lofty



both sheep and cattle, and is not so astringent as some edible species.

Its wood is useful for tool handles, cabinet work and building purposes, and when first cut is pale coloured gradually darkening at the heart.

When planted in a well-drained position it provides a splendid shade tree which can grow to a height of about 21 m in warm moist conditions; or it can remain as a relatively smaller tree when grown in open situations in Canberra or similar climates.

It can be easily recognised when the young shoots are bruised or broken, as it gives off a peculiar odour similar to sarsaparilla.

A. excelsa is widely distributed in the Eucalyptus forests of the Northern Territory and Queensland and in the coastal regions from northern Queensland to the south coast of NSW, in or near rainforests. It has also been identified growing in Brigalow scrub in the interior of NSW, in areas such as Narrabri.

The specimens growing in the northern part of the country have a much rougher bark than those found in the southern regions, the latter having smooth or nearly smooth bark.

Propagation is from seed, raised fairly easily, and the species can be regarded as a comparatively fast growing tree.

It was originally named *Colubrina excelsa* in 1837, but this was changed to *Alphitonia excelsa* in 1863.

Belonging to the same family as *Pomaderris*, it is very similar to some species of this genus in both flower and seed formation.

The alternate leaves, narrow to elliptic and 7 to 12 cm long, are white or rusty-tomentose on the under surface. The young branches and inflorescence may also be clothed in these short rusty hairs.

Flowers, although individually insignificant, cover the tree with clusters of small cream blossoms in late autumn and early winter. The fruits which follow are more attractive, being ovoid, blackish drupes usually 6 to 10 mm in diameter.

Specimens in Canberra Botanic Gardens are twenty years old and growing well. They have shown little evidence of insect or disease attack, although the tree is semi-deciduous and during winter may give the false impression that it is suffering from one or both of these problems.

The splendid natural shape of *A. excelsa* is one of its most distinctive features and the foliage extends to near ground level if desired. It has been used as a street tree in some areas where space will allow, such as wide nature strips, but because of its semi-deciduous nature in Canberra may not be suitable for this purpose here.

CASSIA ARTEMISIOIDES

Cassia artemisioides: *Cassia* — from the ancient Greek name of the plant, *kassiah*; *artemisioides* — similar to *Artemisia* (named after Diana, a divinity of ancient Greece)

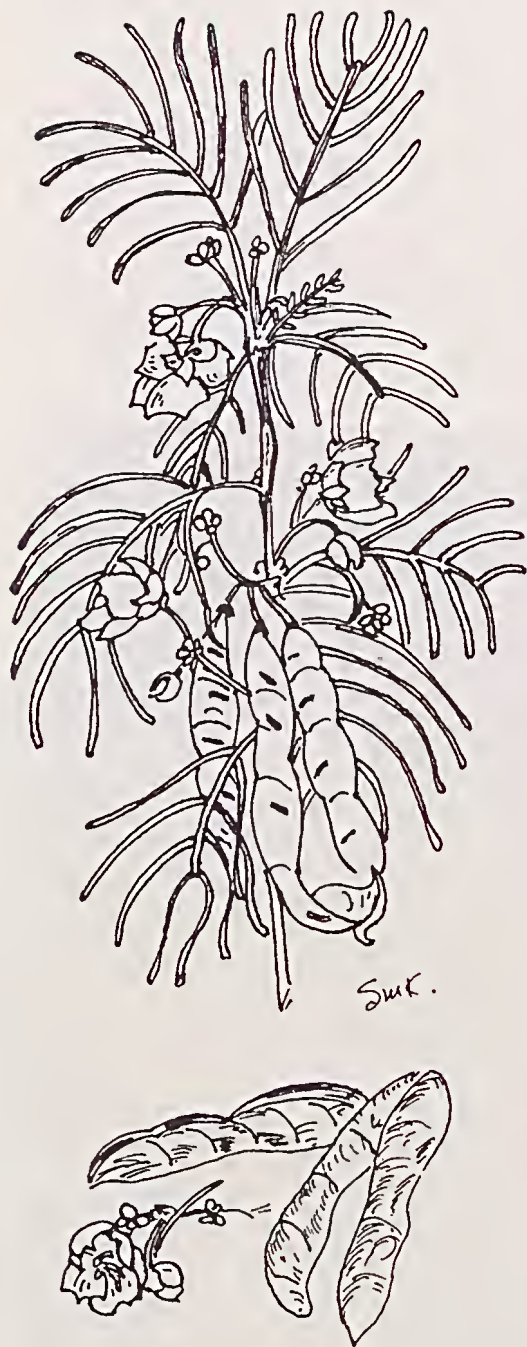
Cassia artemisioides, a rounded bushy shrub, is covered with a pleasant silky white down which gives it the popular name of Silver Cassia. This species is one of the thirty or so *Cassia* spp. endemic to Australia and a representative of a cosmopolitan genus of the family Caesalpiniaceae which has over 400 species, mainly in warm tropical areas around the world.

Many of the species contribute to therapeutics, this demonstrating another popular name, Senna. Others provide material for tanning.

This shrub grows naturally in the semi-arid regions of Western Australia and South Australia and the western parts of Queensland, New South Wales and north-western Victoria (with some doubt). Other plants usually found in association include Mulga, Wattle scrub and Spinifex.

Summer in these regions is very hot and





Cassia artemisioides

although the nights are often cool, frosts are seldom. Rainfall either summer or winter is erratic and rarely exceeds 500 mm with the average nearer 170-230 mm per year. In this type of country the soils are usually red loams and sands, near neutral.

As may be expected, this plant prefers a hot sunny position with a free draining soil. In Canberra Botanic Gardens, however, with only token regard to drainage, several of these plants are thriving. An enthusiastic grower from the Werribee district in Victoria has reported success using gypsum (calcium sulphate) and rotted organic matter to modify a very heavy clay.

The habit of the Silver Cassia is moderately compact, the height seldom greater than 1.5 m and with a similar spread. The silver green feathery leaflets are a feature of the plant.

In a garden situation the yellow flowers are seen most of the year with an extra display in spring and summer. The cup-shaped flowers have five sepals and five petals, the stamens are free and have a contrasting fawn colour. Seeds are produced from the end of December from an elongated pod.

C. artemisioides provides a valuable foliage contrast in a shrub garden, but may also be used as a specimen plant.

Propagation is from seed which must be scarified or treated with boiling water before planting. With the latter, boiling water is poured over the seed; it remains in the same water overnight and is planted the following morning. The seeds that have become plump and swollen are the ones to plant. Sow in a prepared seed box and cover the seed to about twice its thickness. Try to avoid the problem of damping off by using a capillary bed for seeds. This method is well described in *Growing Native Plants*, Vol.2, p.29. Seedlings should be transplanted when the second set of leaves has just appeared. When collecting seed keep a careful watch on the pods. As soon as they start opening collect the seed at once, or it will be attacked and rendered useless by bean weevil insects.

Pruning should be kept to a minimum, but light pruning after the main flush of flowers may be safely carried out.

ALYOGYNE HUEGELII

Alyogyne Huegelii (Lilac Hibiscus), formerly known as *Hibiscus huegelii*, and still found in many retail nurseries as such, is a rapid growing medium-sized shrub reaching about 2.5 m tall and almost equal breadth. It is found naturally in sandy to sandy-gravel areas of South Australia and Western Australia and although adaptable to a wide range of soil types, it is intolerant of bad drainage.

The specimens which are thriving best in Canberra Botanic Gardens are those in fairly open positions and receiving sunlight for most of the day; they have some degree of wind protection from surrounding shrubs and trees. Most plants are growing in mulched, fairly heavy soil and are reasonably well drained thus showing some adaptability from their natural occurrences of sand and gravel.

A. huegelii tends to become a little sparse of foliage on lower limbs if left completely

unpruned. After the main flowering flush in late spring the shrub can be pruned back quite hard. This species has the desirable ability to throw out vigorous, fast-growing shoots from old wood, thus enabling it to be kept down to a small compact shrub if desired.

The species belongs to the family Malvaceae and as such has one characteristic common to that family: the flowers open in the morning and last one day. Even so, the shrub is capable of producing hundreds of blooms per season. From late spring to the end of summer finds the species covered in lilac flowers, some 7 cm across with reddish-purple throats. Other colour forms found are violet, blue, rose pink and white.¹

The leaves are hairy, deeply three-five lobed and dull green in colour and can look attractive as long as the shrub is kept compact as previously stated.

No pests have been noted but some protection from the hardest frosts is required. The best way to propagate *A. huegelii* is by half-hardened tip cuttings 7-8 cm long, although soft tip cuttings also do well.

¹ RHS Colour Chart, 1966, violet-blue 92B or 94D.

Alyogyne huegelii: *Alyogyne* — from the Latin, alyo, winglike, and the Greek, gyne, ovary; *huegelii* — after Baron von Huegel, an early Australian botanist



HELIPTERUM MANGLESII and H. ROSEUM

H. manglesii and *H. roseum*, or Everlastings as they are commonly known, make a pleasing addition to most gardens. The colours are soft, varying from white to deep rose, and a colourful concept may be achieved whether they are used as a border or mass planting.

This genus is closely allied to *Helichrysum* and both belong to the large Daisy family Asteraceae (formerly Compositae).

The genus *Helipterum* comprises about sixty species in Australia while about twelve others occur in South Africa. The Australian species are chiefly small annuals which have adapted to the inland plains area of Western Australia. *H. albicans* is a showy and quite variable perennial of the eastern regions. *H. anthemoides*, a dainty little white paper daisy with a long slender stalk, is worthy of mention for use in a rock garden or border. This species is widely distributed from the drier and higher parts of the coastal plain to the alpine regions.



The species most commonly used in cultivation at Canberra Botanic Gardens are the annuals *H. roseum* and *H. manglesii*. Improved horticultural strains of these species have resulted in variation of form and colour and the development of a more robust plant with larger flowers.

H. roseum grows from 30-50 cm in height; its branches are erect, each terminated by a single large flower head composed of many pointed white to deep rose rays.¹ Several cultivars and pure colour strains have been developed and are available from local and overseas seed merchants where it is often referred to by its obsolete name of *Acroclinium*.

H. manglesii is a neat glaucous annual and grows from 30-40 cm. The slender long pedicels bear nodding, showy flower heads varying from white to a soft rose pink.²

Cultivated varieties of these species are easily grown in most garden soils, but perform better in fairly well drained open soil into which a little sand has been incorporated. For a pleasing effect seed may be sown at random directly into the bed in spring. Sowing into seed trays may be carried out between June and August providing there is protection from frost.

Seedlings are pricked off soon after germination occurs (about four-seven days) and planted out about mid-October or when the danger of frost has passed. Plants should be spaced about 20 cm apart. Careful watering is essential after planting out to ensure that the soil does not dry out until the new root systems have developed.

These annuals respond well to an application of a complete fertilizer such as 10:9:8 and this is best applied to the soil before planting at the rate of 30 g over 1 m². Light pruning has shown that the flowering period may be extended. They are fairly resistant to insect pests and disease but require protection from snails.

Helipterum spp., like *Helichrysum* spp., are sought-after as cut flowers and for use in dried flower arrangements. Form and colour are retained when dried and for this purpose partially expanded flowers are preferred.

¹ RHS Colour Chart, 1966, varying from red-purple group 57D-67D.
² RHS Colour Chart, 1966, red-purple group 68B.

Helipterum roseum: *Helipterum* — derived from the Greek, helios, the sun; and pteron, a wing (referring to the plumed pappas); *roseum* — rose coloured

Right: *Helipterum manglesii*: *manglesii* — after George Mangles, an Englishman who encouraged botanists to collect specimens in Western Australia in early settlement days



SENECIO LAUTUS

ssp. MARITIMUS

Senecio lautus ssp. *maritimus* is a widespread and common species throughout temperate coastal Australia where it grows in a variety of situations from exposed headlands to moist river flats.

However it is little known in cultivation where it provides an interesting addition to the growing list of Australian native ground covers.

It forms a low compact plant which can be used singularly or en masse with equally good effect. Individual plants scattered amongst other rockery plants give a striking splash of colour when the rest of the garden is looking rather dull.

Like many *Senecio* spp. it bears bright yellow flowers which occur throughout the year with increased flowering in winter and spring.¹ The foliage is soft and of a fine texture and its mid-green colour provides an interesting contrast to the yellow daisy-like flowers borne above it.

Senecio lautus ssp. *maritimus*: *Senecio* — from a Latin name used by Pliny, from *senex*, an old man, referring to the usually white or grey-haired-like pappus; *lautus* — fine, neat; *maritimus* — growing by the sea

Growth is rapid in Canberra conditions with individual plants reaching their maximum spread of 50 cm in six to eight months. Specimens in Canberra Botanic Gardens favour an open, sunny and well-drained position with adequate water during summer dry periods. A sunny position is essential to promote a free flowering plant. Trials have shown that in this situation plants are completely frost hardy, though in colder climates some frost protection is advisable.

If adequate surface water is provided, *S. lautus* ssp. *maritimus* has a tendency to root at the nodes of the stems and so become self-propagating which is also helpful to bind the soil on steep slopes, a useful feature to be considered when selecting any ground cover.

Propagation is generally confined to cuttings as the seed has proved unreliable. Tip cuttings are best when taken in winter and placed in a propagation bench with bottom heating. Rooting takes two-three weeks with a high percentage strike in most cases. Cuttings taken at this time of the year should be sufficiently advanced for planting out in the following spring, though cuttings can be taken at any time with similar results.

In Canberra Botanic Gardens pests and diseases seem to be confined to two species of caterpillars. One species is of the type which feeds on the surface of the leaves causing a rather ragged appearance. This caterpillar is best controlled with substances such as lead arsenate, two applications sometimes being needed for complete control. The other species of caterpillar is of the leaf miner type and causes leaves and tips to wilt and die if control measures are not taken. These larvae are best controlled with a semi-systemic insecticide such as Rogor.

¹ RHS Colour Chart, 1966, ray florets, yellow group 12A; disc florets, yellow-orange group 15A.



ANGOPHORA CORDIFOLIA

The Dwarf or Scrub Apple (*Angophora cordifolia*), with its twisted growth habit, gnarled branches and rough loose bark would make an interesting addition to a garden of Australian character. Its young branches and inflorescences covered with reddish hairs throughout the year heighten its appeal.

It occurs naturally on scrubby ridges in parts of the Hawkesbury sandstone area between the Royal National Park and Gosford NSW as a shrub or small twisted tree up to 6 m in height.

Confined to Australia, there are four species of evergreen trees and shrubs within this genus which is closely related to *Eucalyptus* and also belongs to the family Myrtaceae. Their botanical characteristics differ in that *Angophora* has opposite leaves whereas in *Eucalyptus* they are mostly alternate, except for juvenile leaves and several species that retain this type of foliage throughout their life.

The leaves do not have the oily smell of most Eucalypts and there is no operculum or cap covering the undeveloped flowers as there is in all Eucalypts.

The flowers of *Angophora cordifolia* are rather large with 4-6 in each cyme forming a fairly dense terminal cluster. They are typical of so many Myrtaceae genera in that their chief attractive feature is the numerous stamens which form a circular spreading mass. The filaments are white and the anthers yellow.

The flowering period is in January when clusters of creamy white flowers provide a striking contrast against a background of olive-green leaves.¹

The leaves are leathery, heart-shaped and without a stalk while the fruit is a capsule which is distinctly ribbed with five triangular-shaped 'calyx teeth' adhering to their rims. When ripe the capsule opens suddenly to release three flat seeds, so the tree must be kept under observation if its seed is to be collected.

Although this species is not commonly grown in Canberra it is worthy of cultivation, particularly as a feature specimen in a corner



Angophora cordifolia: *Angophora* — derived from Greek words, aggos, a vessel, and phero, to bear, an allusion to the shape of the fruit; *cordifolia* — with heart-shaped leaves

of the garden which is not too exposed.

There are two fully grown specimens of *A. cordifolia* in Canberra Botanic Gardens and no pests or diseases have been apparent. During the flowering season, colourful beetles are attracted to the nectar-laden blossoms as are numerous birds.

Propagation is from seed which may be germinated in a mixture of coarse washed river sand and perlite. On planting out, some protection from frost may be necessary until the plant becomes established. A complete fertilizer such as 10:9:8 should be applied in spring.

If preferred Dwarf Apple can be kept as a shrub for a number of years by systematic pruning.

¹ RHS Colour Chart, 1966; stamens—anther, yellow group 11C, filament, yellow group 11D.

BORONIA MOLLIS

Boronia mollis: *Boronia* — after Francesco Borone, a plant collector of the 18th century; *mollis* — Latin for soft or hairy, referring to the leaves and stems



Boronia mollis is a variable shrub which may reach a height of about 3 m x 1.5 m wide in its natural habitat. It occurs naturally around Sydney, ranging as far north as Coffs Harbour and inland as far as the dividing range. It is found growing in cool, shady situations, frequently on creek banks or the border of rain forests. In these situations it is often a tall straggly shrub, sparsely flowering where it reaches the sun.

The specimens growing in Canberra Botanic Gardens are from a clone collected near Lorne, west of Laurieton, NSW. The original plant was a densely branched specimen 1.5 m x 1.5 m growing in full sun on the top of an exposed ridge. This habit has been maintained by the progeny and a plant of outstanding horticultural merit has resulted.

The leaves are pinnate and the under-surface and stem are covered with fine hairs. The leaves possess glands which emit a pungent volatile oil when crushed. This is characteristic of the family Rutaceae to which *Boronia* belongs. It has been suggested that the scent from this oil protects the plant from herbivorous animals.

The flowers, which are produced in abundance from late winter through spring and occasionally throughout the year, are deep pink and the short stamens are bright yellow.¹ The flowers form in clusters in the axils of the leaves and have four petals and eight stamens with two small bracts on the pedicel.

The plants growing in Canberra Botanic Gardens have an easterly aspect and are growing in the rocky, natural soil of Black Mountain. All plants have been mulched and are growing amongst *Eucalyptus rossii* and *Eucalyptus macrorhyncha* which provide mottled shade for various periods during the day. The plants are rounded in habit and bushy to the ground, ranging in height up to 2 m. One large plant has been staked to protect it from wind damage. All plants have been fertilised with 30 g of 10:9:8 per square metre and watered regularly during the summer months.

Boronia spp. are subject to *Phytophthora* root rot and thus a well-drained soil is needed to prevent conditions favourable to this fungus. In general, a light, sandy loam is best with a surface mulch to provide a cool root run. This particular form can take more sun than most *Boronia* spp. but some protection from drying summer winds should be given. Excessive watering should be avoided as these plants prefer capillary moisture from below.

Propagation is by cuttings taken in summer and few insect pests have been noticed.

¹ RHS Colour Chart, 1966, flowers, red-purple group 68A.

BANKSIA ROBUR

Banksia robur; *Banksia* — after Sir Joseph Banks, the famous British scientist who travelled with Captain Cook; *robur* — strength, probably referring to the robust nature of the plant

Banksia robur, the Swamp Banksia, occurs in swamps along the coast and nearby plateaus of NSW and Queensland from the Illawarra district in the south to Gladstone in the north.

In most parts of its range it is rarely taller than 1-2 m but in cultivation it readily reaches 2 m or more with a spread of at least 2 m.

Despite its natural occurrence in wet places it is a most adaptable plant in the garden and will thrive in a great variety of soils and situations. It is ideal for the damp corner but providing adequate watering is available it will tolerate a much drier site. Full sun is required for good flowering.

B. robur is a dramatic shrub. Its very large, stiff serrated leaves may reach 40 cm long by 12 cm wide. They are a mid-green above with a pale, flannel-like under-surface which contrasts with the feather-like yellow-brown veining of the older leaves. The yellow mid-vein is also obvious on the upper surface. In the



young growth a rusty-brown tomentum covers these veins and new stems.

The open habit of the shrub and the heavy leaf structure gives the plant a bold outline which may be incorporated as a feature in a home landscape or as a group planting in an urban park situation.

The flower spikes appear generally in autumn and winter but odd flowers may appear in other seasons. When in bud, they appear as a bluish-green but turn yellow-green as the flowers open.¹ The flowers darken on further ageing and persist after drying for many months, sometimes years. Flower spikes may be borne terminally or along the older stems from ground level and in many cases multiple spikes occur. The spent flowers, many bearing fruit, form an interesting feature of the shrub.

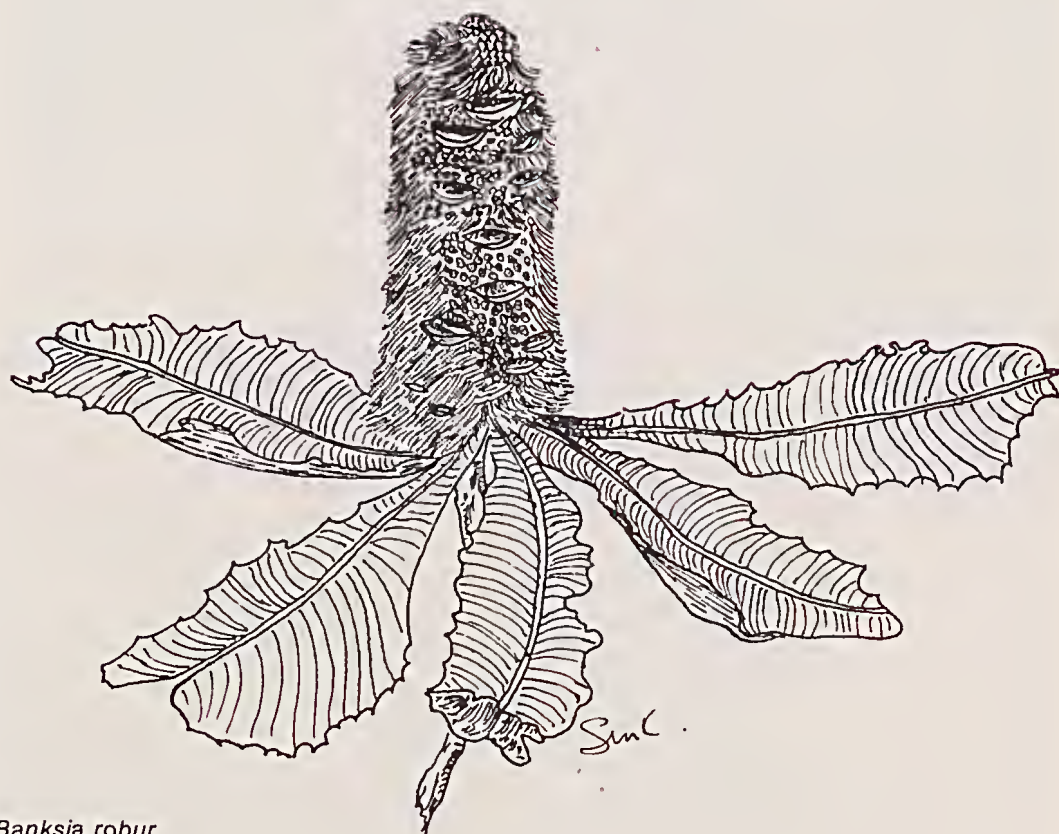
In Canberra Botanic Gardens the species has proved hardy to frosts in open situations

after the first year but may require covering for the first winter if growth is soft. It grows quickly, reaching 1.5 m in three years and bearing its first flowers at that time.

It seems to be generally resistant to *Phytophthora cinnamomi* although this fungus has been isolated from one specimen. Apart from occasional chewing insects the plant appears to be pest free. Pruning may be carried out after flowering, if a more branched, tighter habit is required.

Propagation is from seed which germinates readily in three-five weeks. Seedlings should be pricked out at the cotyledon stage and grown on in a well-drained mix prior to planting.

¹ RHS Colour Chart, 1966, flower spike, green group 137C.



Banksia robur

ACACIA BECKLERI

Acacia beckleri is a plant not commonly seen in household gardens, but one which deserves to be grown more widely. In three to four years it will form an attractive rounded shrub 2 m high and even without flowers the shape of the shrub makes it attractive for the landscape design of small gardens.

In Canberra Botanic Gardens, *Acacia beckleri* begins flowering in early May and continues through until late July. This makes it a particularly useful plant, providing bright yellow flowers at a dull, cold time of year. The flowers are large, dense, globular-shaped balls 1-1.5 cm across with three-seven flower heads to a raceme. The phyllodes (modified leaves) are slightly curved, or straight and narrow 13-18 cm long with a dull point and 1-1.5 cm wide, with two-four glands on the upper leaf edge.

The natural occurrence of *Acacia beckleri* is in the Flinders Ranges of South Australia and also Broken Hill to Ivanhoe in NSW. Specimens in Canberra Botanic Gardens were grown from seed sown in 1963 and after twelve years are still attractive shrubs.

Propagation is by seed sown in spring or early summer. Sown at this time, seedlings grow to large healthy plants ready for planting in the garden in autumn. For good germination results seeds should be pre-treated before sowing (see *Growing Native Plants* Vol. 2, p. 29).

Pruning is usually unnecessary and only the occasional removal of dead twigs is required. Acacia bug may cause some damage to the phyllodes and if this becomes severe the shrub should be sprayed with Rogor 40 at the normal recommended strength.

For best results planting should be in an open sunny position with a well-drained soil. Overcrowding is best avoided as this will cause the plant to become leggy and unattractive. Plants are normally quite hardy and if watered during dry periods, especially in their first year, little other attention is required.

Acacia beckleri: *Acacia* — may be from the Greek to sharpen, in reference to the prickly nature of the first species discovered; another opinion refers to the Egyptian Thorn (*akakia*), a species of *Acacia* which yields gum arabic; *beckleri* — after Herman Beckler, botanist on the Burke and Wills expedition



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